

## REDWOOD NOTES

Use this page to write observations and draw what you see.

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National Park Service  
U.S. Department of the Interior



Muir Woods National Monument

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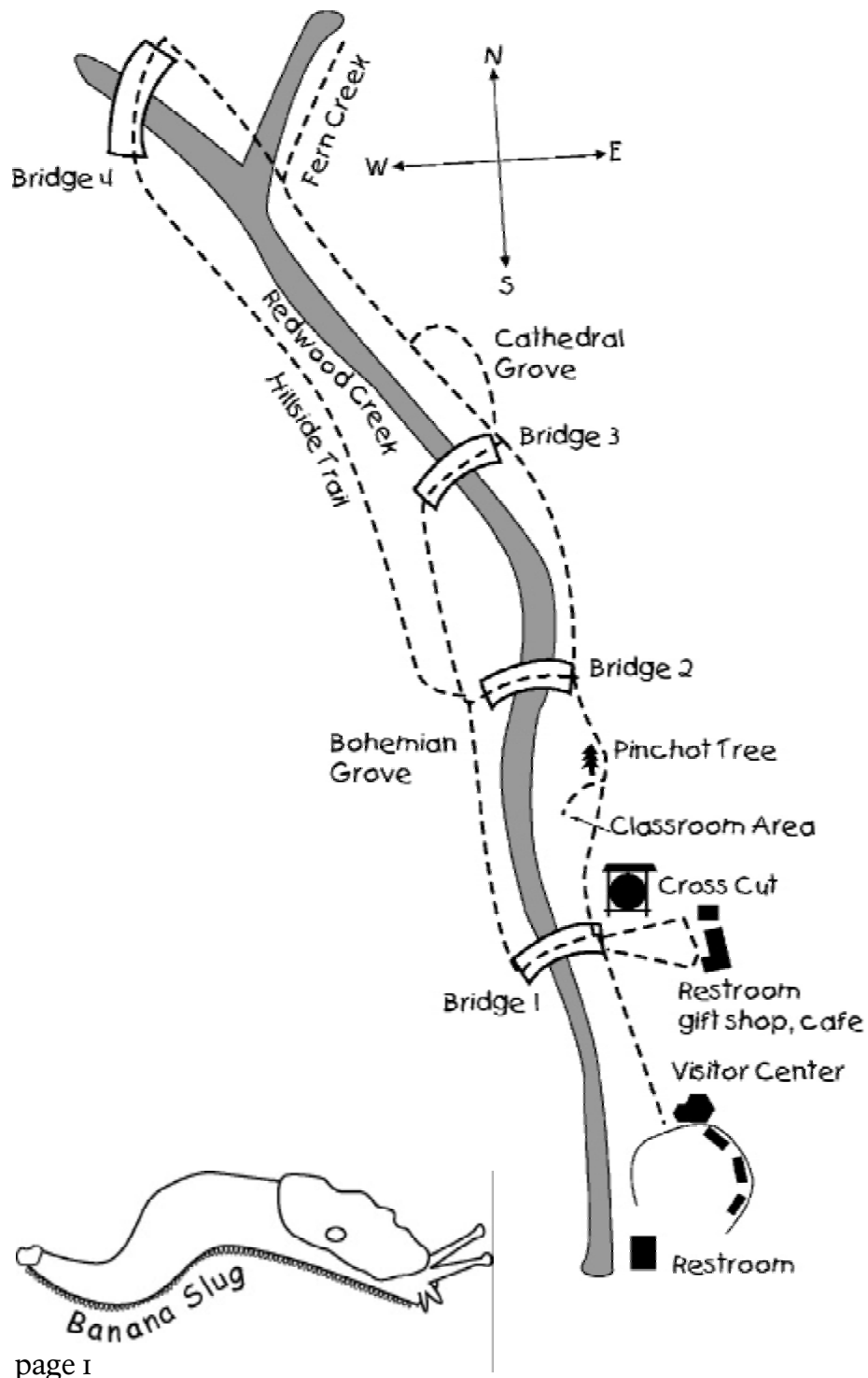
## Junior Ranger Activity Book



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EXPERIENCE YOUR AMERICA

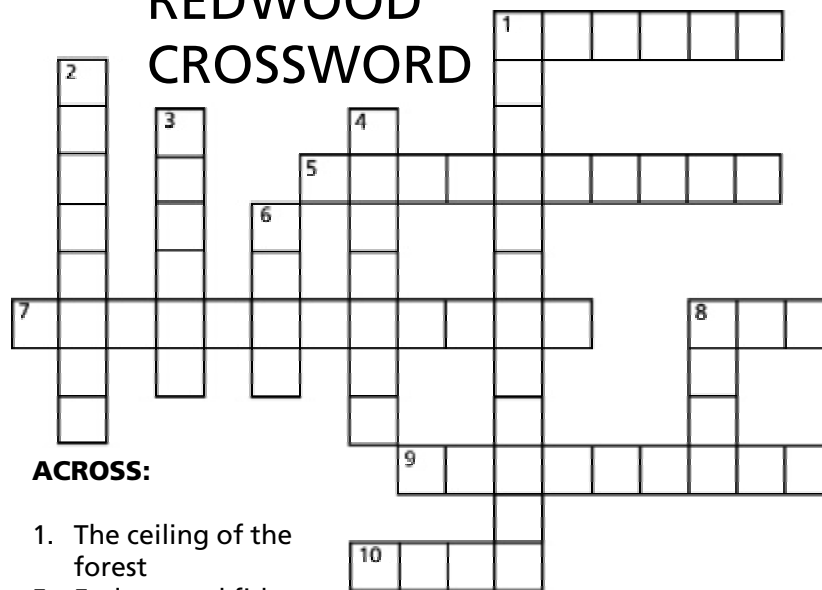
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## BONUS ACTIVITY

You can complete this at Muir Woods, or do it when you get home.

## REDWOOD CROSSWORD



### ACROSS:

1. The ceiling of the forest
5. Endangered fish that are in Redwood Creek
7. A person who promised to preserve and protect the environment
8. Particles in the air that give the trees and plants water.
9. A plant that likes the shade.
10. Falls from the tree to grow new redwood trees.

### DOWN

1. The tallest living thing in the world.
2. The person Muir Woods is named after.
3. A chemical in redwood trees that protect them from rot, fire, and insects.
4. Device used to find directions.
6. A mass of redwood tissue found on the tree and on its roots.
8. Burns dead leaves and branches and makes the soil full of food for plants.

Answers: Across: 1) canopy 5) coho salmon 7) junior ranger 8) fog 9) sword fern 10) seeds. Down: 1) coast redwood 2) John Muir 3) tannin 4) compass 5) burl 8) fire

## **CONGRATULATIONS!!! You have almost completed the Junior Ranger Challenge.**

Your Muir Woods Junior Ranger Certificate may be obtained by answering these three questions:

1. What are the two ways that redwoods reproduce?
2. What does nature provide to help clean the forest floor so seeds may germinate and grow?
3. What endangered species are in Muir Woods?

Leave the answers to these questions at our Visitor Center with your full name and address, or mail them to us at:

Muir Woods National Monument  
Junior Ranger  
Mill Valley, CA 94941

OR you can e-mail the answers to us at:

[goga\\_muir\\_woods\\_nm@nps.gov](mailto:goga_muir_woods_nm@nps.gov)

We will send you a certificate of achievement. Make sure you print your full name for us.

When you get home, you may want to visit our website at [www.nps.gov/muwo](http://www.nps.gov/muwo) to learn more about Muir Woods National Monument. Visit your local library; the librarian may recommend some books for you to read.

## Welcome to Muir Woods National Monument

This redwood forest is protected by the National Park Service so that everyone may enjoy its beauty and importance. Your job as a Junior Ranger is to find out what makes redwood forests so special.

But first, there are a few things to remember in every National Park:

- Stay on the trail
- Leave only footprints (no littering)
- Take only memories
- Have fun

### JUNIOR RANGER PLEDGE:

I promise to preserve and protect the plants, animals, and history of the national parks and my community by observing the park rules and showing respect for the environment wherever I go.

### Junior Ranger Challenge:

Think of two more things you can do to help protect the National Parks. Write them here:



**STOP at the redwood relatives exhibit past bridge one.**

There are many trees in the redwood family, but there are only three types of trees called "redwoods" in the world. They grow in different places. The coast redwood grows at Muir Woods.

**JUNIOR RANGER CHALLENGE:**

Find the other two redwood trees in the exhibit and make a check mark next to the pictures below.



Giant Sequoia



Dawn Redwood

Which redwood tree is deciduous (pronounced DEE-SID-YOU-US)? This means it drops its needles in the winter and grows new ones each spring.

What is the national tree of Mexico?

What tree is sacred in Japan?

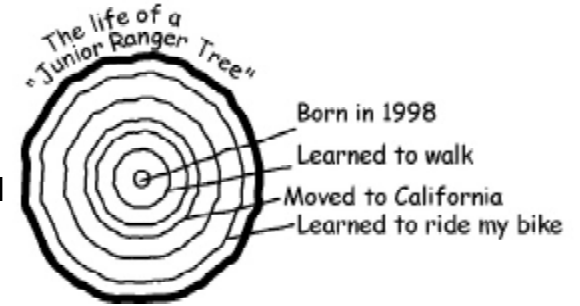
What country is home to two types of ancient trees?

Do you know of any special tree where you live?

**"Immortal sequoia life to you" –John Muir**

**Rings of Life Activity:**

Draw a ring diagram of your life showing every birthday you've had. There should be as many rings as the number of years old you are.



Include on your drawing all the important times in your life. Look at the example to get the idea.

**JUNIOR RANGER CHALLENGE:**

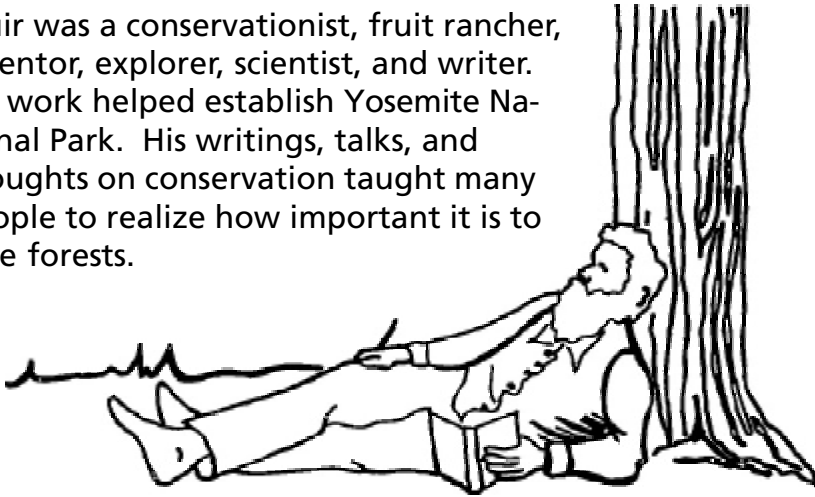
Trees are the oldest living things on Earth. They make our lives better in hundreds of ways.

Name 3 reasons to plant or save a tree:

- 1.
- 2.
- 3.

## Who was John Muir?

John Muir, for whom this forest was named, said "This is the best tree lover's monument that could possibly be found in all the forests of the world." Mr. Muir was a conservationist, fruit rancher, inventor, explorer, scientist, and writer. His work helped establish Yosemite National Park. His writings, talks, and thoughts on conservation taught many people to realize how important it is to save forests.

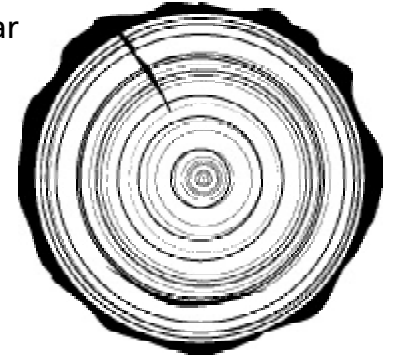


## JUNIOR RANGER CHALLENGE:

You are almost at the end of your visit to Muir Woods. Take a moment to think about your visit here today. Find a quiet place and write down what you can do to conserve nature and protect the environment.

## STOP at the Cross section exhibit

Many plants, like redwood, have indeterminate (pronounced IN-DEE-TER-MIN-IT) growth. That means they can keep growing for as long as they are alive. You can tell how old a fallen redwood tree is by looking at the rings of the cross section. A cross section is big round slice from the trunk of a fallen tree, like when carrots are sliced into thin circles. Each ring is one year of a tree's life. The ring has a light part that grows during spring and a dark part that grows in summer, fall, and winter.



## JUNIOR RANGER CHALLENGE:

Take a look at the cross section; can you figure out how old it is? Subtract the year it fell from the year it was born and write the answer here:

Look for the thickest ring on the tree. What do you think made the tree grow so thick that year?

## FUN FACT

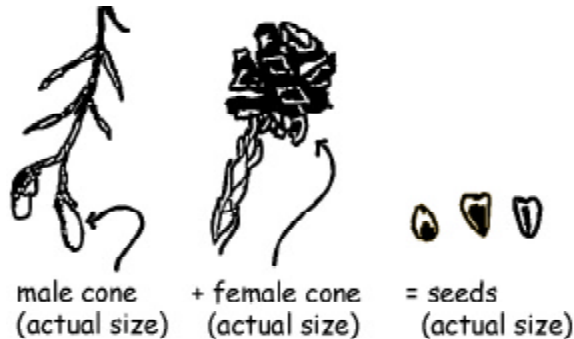
Poison Oak is a plant that makes people itchy if they touch it, but deer like to eat those green, sometimes red, shiny leaves of three. Remember: "Leaves of three, let them be."



## How do redwoods reproduce?

Find a large lump on a redwood tree. It is called a BURL. A burl is a mass of redwood tissue that is about the same color as the bark found on the trunk and also on the tree's roots. It may have small redwood sprouts growing out of it. When a tree is stressed or hurt from fire, wind, or humans, the burl will send up new sprouts. This is one way redwood trees reproduce.

Continue along the trail and stop and read the "Family Circles" and "From These Small Seeds" exhibits. They will tell you more about redwood reproduction.



### JUNIOR RANGER CHALLENGE:

Trees that grow close together and in circles grow from burls on the roots. They are called family circles. See how many family circles you can locate during your visit, and write the number here:

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Trees that are standing all by themselves grow from seed. See how many trees you can find that grew from seed during your visit.

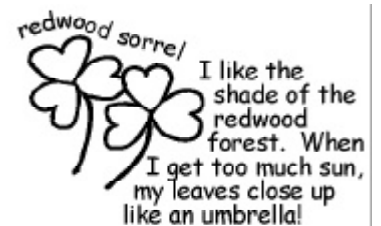
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## Shady Forest

Look up. . . do you see the ceiling of redwoods above you? The "ceiling" in a forest is called the canopy. The canopy soaks up much of the sunlight, so the plants that line in the redwood forest like it cool and shady or have adapted.

### JUNIOR RANGER CHALLENGE:

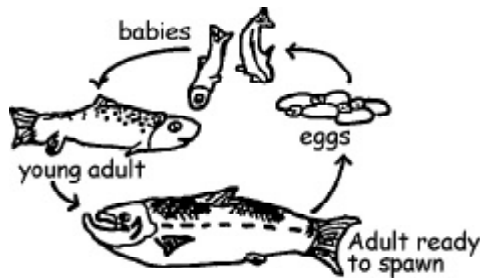
Below are drawing of two plants that love the shade and one tree that has adapted by reaching for the sun. Find them in the forest near you. Put a check next to the plant when you find it.



## STOP at bridge 2.

### Redwood Creek

Take a look in Redwood Creek and you may be lucky to see a salmon or steelhead trout. This creek is one of the few natural habitats for the endangered Coho salmon. Can you believe the fish in this creek depend on the redwoods to keep living? When trees fall into the creek, they make the creek slow down and allow the gravel to build up. Salmon lay their eggs in beds of gravel. Fish also hide under fallen trees in the creek so they don't get eaten by other animals. All the other plants on the banks of the creek help keep too much soil from going into the creek. If there is too much, it will block the oxygen so the fish can't breathe.



### JUNIOR RANGER CHALLENGE:

What ocean does Redwood Creek flow into?

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Look into the creek and see if you can see any baby fish.

What can you do to keep the creek and ocean clean?

- Pick up litter.
- Don't throw coins in the water.
- Don't pour chemicals, like car oil and house paints, down the drain.

**Cross Bridge 2, turn left, and go to Bohemian Grove, OR continue on to left path in the Cathedral Grove.**

### Walk into the hollowed out tree. How did this tree get like this?

Fire is very important for a natural forest. It burns dead leaves, branches, and plants on the forest floor. The burned material makes the soil rich and full of food for plants. This helps redwood seeds to sprout and grow up to be tall trees. Redwoods protect themselves from fires with their bark, which can be up to a foot thick. Redwoods produce a special chemical called tannin. The tannin makes the tree red and protects it from fires, insects, and rot.



### TALLEST TREES

Did you know that the tallest tree in the world is a coast redwood? Can you see the top of a redwood tree? The tallest redwood is over 368 feet tall. That's 63 feet taller than the Statue of Liberty! The tallest tree at Muir Woods is over 260 feet tall. That's as tall as 64 kids stacked on each other's heads.



**STOP any place near the creek.**

**JUNIOR RANGER CHALLENGE:**

Redwoods can drink up to 500 gallons of water a day!  
Can you list the tree ways redwood get their water?

It rains here only during the winter. So how do the trees and plants get water during the other seasons? The creek flows all year so that is a good source of water. Another importance source is fog. Drring the dry months the fog comes rolling in off the ocean. On really foggy days, the fog drips from the tall trees. This gives the trees and the plants of the forest about four inches of water a year.



**JUNIOR RANGER CHALLENGE:**

Complete a four-line poem about the redwood trees.  
Use the sentence below as your first line. Write one line about the color of the forest, one line about what you hear, and a final line about the forest in general.

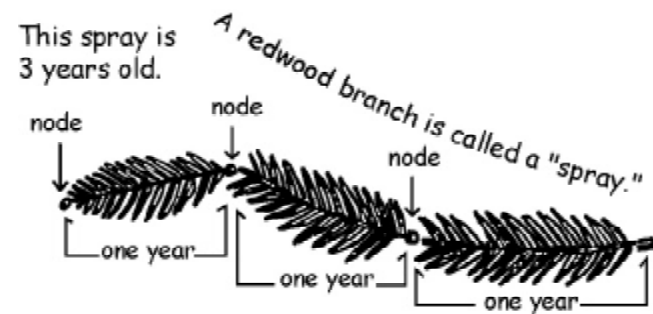
Redwood trees growing so tall.

**STOP at the Pinchot Tree. (Rangers often give talks here. You can stop and listen if you want to.)**

In 1905 William and Elizabeth Thacher Kent bought this redwood forest for \$45,000. The Kents asked their friend Gifford Pinchot for advice on how to protect it forever. Mr. Pinchot suggested they donate the forest as a national park. In 1908, President Teddy Roosevelt declared their gift a National Monument, naming it after the conservationist John Muir.

**How old are coast redwoods?**

Redwood trees are very old. The coast redwoods have been on earth for over 150 million years, since the time of the dinosaurs. The average age of the redwood trees in Muir Woods is between 500-800 years. The oldest trees are over 1000 years old. The oldest known coast redwood tree is over 2000 years old.



**JUNIOR RANGER CHALLENGE:**

Look on the ground and find a long redwood spray.  
You can count the nodes or bare spots to tell how old it is. Each year a node grows at the end of a spray, so a branch is as old as the number of nodes.

Write down the age of your redwood spray: \_\_\_\_\_